

REMARKS

I. CONSTRUCTIVE ELECTION & WITHDRAWAL OF CLAIMS 13-19

[0001] Claims 13-19 were withdrawn, being deemed a separate invention distinct from claims 1-12 and constructively non-elected. Concurrently filed is a related application directed to claims 13-19.

II. CLAIM REJECTIONS UNDER 35 U.S.C. 102(b)

[0002] Claims 1-11 were rejected under 35 USC 102(b) as unpatentable over Teetzel, et al, USPN 4,275,529 (herein referred to as “Teetzel”). Applicant respectfully traverses the rejection.

[0003] Amended claim 1 recites in part, “where an **exposed surface** is formed by a short side (6) and a long side (7); and where the exposed surface is **angled** differently than a support (2).” Teetzel does not teach or fairly suggest angled, exposed surfaces upon a disc. Teetzel’s wheel has closed flaps, unlike the angled, exposed surfaces of claim 1. Also, since Teetzel lacks a support(2), there is no analogous “support” structure in Teetzel to contrast different angle. Therefore, claim 1 is not anticipated and allowable. Accordingly, claims 2-12 are also not anticipated and allowable.

[0004] Amended claim 2 recites in part, “the sanding lamellas (3) and the compressible lamellas (4) are fixed on the support (2); and where the support (2) is substantially a round disc shape.” Teetzel lacks any disc-shaped support (2). Teetzel does not teach or fairly suggest a disc-shaped support since its flaps extend from the center. In this sense, Teetzel is a wheel and not a disc as claimed. *See also*, Declaration of David Wagner submitted under 37 CFR 1.132 (“DW”), Paragraphs (¶¶) 15-16. Therefore, claim 2 is not anticipated and allowable. Accordingly, dependent claims 3-12 are also allowable.

III. CLAIM REJECTION UNDER 35 U.S.C. 103(a)

[0005] Claim 12 was rejected under 35 USC 103(a) as unpatentable over Teetzel. Applicant respectfully traverses the rejection. Claim 12 recites, in part, “fibres are formed by polyamide yarns between 0.75 millimeters and 0.85 millimeters in diameter.” The rejection states that “using known fibers made of polyamide having claimed diameter would have been an obvious design choice based on machining parameters and desired finish for workpiece.” [OA at 3.] It is respectfully submitted that “machining parameters” is generally subsequent to design choice, not a basis for design (design takes place prior to machining—an engineer does not typically begin with machining parameters to find obvious design choices since “machining” is typically done by a machinist after the engineer has provided specifications). Further, “desired finish for workpiece” implies tool selection. It is true that some consideration must be given to tool selection. DW ¶ 5 (“The choices available include coated

abrasive belts, discs, wheels, paper products, and non-woven abrasives. Each type of product and its various forms have specific applications for which they are best suited. Tool selection is also determined by the type of material intended to be abraded.”)

[0006] An obviousness rejection can be sustained where it would have been common sense, at the time of filing the application, to a person of ordinary skill in the art to try the claimed combination. See *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007). In *KSR*, the Supreme Court held, in part, that the Federal Circuit had erred in holding a patent claim cannot be proved obvious merely by showing that the combination of elements was “obvious to try.” *Id*; MPEP 2141.

[0007] The claimed combination can be seen in claim 12, which is dependent on claim 2 (itself dependent on claim 1). Thus, the issue can be stated as follows: whether it would have been common sense under *KSR v. Teleflex* to try the claimed combination of a “sanding element with a succession of overlapping lamellas (3,4) containing sanding grains (9), characterised in that these lamellas (3,4) are alternately formed of sanding lamellas (3) and compressible lamellas (4), whereby each sanding lamella (3) rests on a compressible lamella (4); where an exposed surface is formed by a short side (6) and a long side (7); and where the exposed surface is angled differently than the support (2) [claim 1]; said sanding lamellas (3) and/or the compressible lamellas (4) are composed of several lamellas of the type concerned; where the sanding lamellas (3) and the compressible lamellas (4) are fixed on the support (2); and where the support (2) is substantially a round disc shape [claim 2]; and wherein the fibres (10) are formed by polyamide yarns between 0.75 millimeters and 0.85 millimeters in diameter [claim 12].” Claims 1, 2 and 12. However, it would not have been “common sense” or obvious to try the claimed combination, since it includes coated abrasives [“sanding lamella (3)” of Claim 1], non-wovens [“compressible lamella (4)”], and large fibers of 0.75 to 0.85 mm [Claim 12]. DW ¶¶ 14 and 20. Since, Teetzel lacks any teaching of exposed, angled surfaces [Claim 1] and a disc-shaped support [Claim 2], making the claimed combination less “common sense.”

[0008] Furthermore, MPEP 2144.08(II) provides, “Use of per se rules by Office personnel is improper for determining whether claimed subject matter would have been obvious under 35 U.S.C. 103.” See, e.g., *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996); *In re Ochiai*, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995); *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994). In the present case, treating the claimed subject matter as “an obvious design choice based on machining parameters and desired finish for workpiece” would work itself into a per se rule, because that rule would make any invention obvious merely for involving “machining parameters and desired finish for workpiece.” Furthermore, that language is not in the patent statute and does not

apply the test for obviousness as interpreted by case law under 35 USC 103 in light of *KSR v. Teleflex*¹ and *Graham v. John Deere Co.*²

Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

KSR (citing *Graham*) (internal citations omitted). In light of case law, an analysis under *Graham* and *KSR* follows:

1. The scope and the content of the prior art.

[0009] Teetzel is cited as the basis for the rejection. Although it teaches a high-density flap wheel, the Examiner recognizes that Teetzel does not teach the claimed fibers formed of polyamide yarns between 0.75 to 0.85 mm in diameter [Office Action dated Oct. 15, 2009 (“OA”).]

2. The level of ordinary skill in the art.

[0010] Under *KSR*, ordinary skill in the pertinent art includes the ordinary artisan’s creativity.³ Here, a person of ordinary skill can be said to possess a Bachelor of Science in Mechanical Engineering or in Chemistry. DW ¶ 7. A development engineer at the only competitor to 3M having U.S.-based manufacturing capabilities in the non-woven abrasives market would recognize that there are significant differences between a flapwheel and a disc. *Id.* Teetzel uses 3M ScotchBrite Very Fine Type A nonwoven. Teetzel 6:50-54; DW ¶¶ 13, 19, 27, 28, 30, and 31. Teetzel’s tests are based on variable speed lathe data, which is not practical in most industrial applications. DW ¶ 15. Further, given a history of thirty years since the filing date of Teetzel (1979), and an absence of teaching the limitations of claim 12, there has been a failure of persons having ordinary skill in the art to have developed the claimed invention. *Infra* at III.4.C. Based on the differences⁴ and the level of ordinary skill in the pertinent art, it would therefore have been nonobvious to the ordinary artisan use variable lathe data from a flapwheel, which is taught by Teetzel, to design a disc with 0.75 to 0.85 mm diameter.

¹ *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

² *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

³ *KSR* (2007).

⁴ *Infra* at III.3.

3. The differences between the claimed invention and the prior art.

[0011] As noted, Teetzel does not teach the limitation of 0.75 to 0.85 mm. OA at 3. Teetzel is a wheel, and CIBO's invention is a disc. DW ¶¶ 15, 16 and 28. CIBO's disc does not change Surface Feet Per Minute (SFPm) as it is consumed by end-user. DW ¶ 16. However, Teetzel's wheel does change SFPm. DW ¶ 15. Any optimum SFPm based on initial compaction (as taught by Teetzel) cannot be sustained and is only attainable for a small fraction of the wheel's useable life, but CIBO's invention will provide constant SFPm and compaction. *Id.*

[0012] In the case of Teetzel's wheel, its outside diameter restricts flex and affects grain efficiency. DW ¶ 18. The end-user has much greater control in SFPm being constant or an optimum depending on the specifics of his tool's speed and material being abraded. DW ¶ 18. Flapwheels, such as Teetzel's, are not constructed of non-wovens using scrim material because that material will not undergo leaf attrition necessary to expose fresh grain. DW ¶ 32. What prevents that desired attrition is the presence of the scrim as being a tough and durable substrate that resists disintegration. *Id.* However, in disc form, those characteristics are highly favorable and desirable for a long lasting, economical disc. *Id.* The use of both a textile coated abrasive in conjunction with a conformable, scrim non-woven provides CIBO's invention with unique stock removal characteristics and finishing properties not attainable with a flapwheel or flapbrush. *Id.*

[0013] Teetzel identifies the non-woven flap material as a "Very Fine" or finer 280 aluminum oxide flap (ScotchBrite Type A). Teetzel 6:50-54; DW ¶ 19. Claim 12 recites fiber diameter and therefore needs to be understood in equal measurement units to provide a basis of comparison, thus helping one understand what is in fact taught by Teetzel, to better inform what is obvious to the person having ordinary skill in the art under section 103. The construction of that material uses a fiber with a denier of 15. DW ¶ 13, 14, 19, 27, 28. The density of nylon is 1.07 grams/cm³. DW ¶ 19. The diameter of Teetzel's "Very Fine" aluminum oxide nonwoven can be calculated as follows:⁵

Volume "V" of a bar is calculated by $\pi * r^2 * \text{length}$.

$V = (3.14)r^2(\text{length})$ and $V = \text{mass} / \text{density} = \text{grams} / (\text{grams/cm}^3)$

$(15 \text{ grams} / 1.07 \text{ grams/cm}^3) = (3.14)r^2 (9000\text{m} \times 100\text{cm/m})$

$(14.02 \text{ cm}^3) / (3.14 \times 900,000 \text{ cm}) = r^2$

$4.96 \times 10^{-6} \text{ cm}^2 = r^2$

$.0022 \text{ cm} = r$

⁵ DW #19.

r = .0223 mm

[0014] The radius “r” is doubled to obtain the diameter. DW ¶ 20 Thus, the fiber diameter of the “Very fine” aluminum oxide non-woven taught by Teetzel is **0.045 mm**. *Id.* Claim 12 recites a much larger fiber diameter of **0.75 to 0.85 mm**. This is “enormous and highly unconventional” for use in an abrasive product that incorporates both coated abrasives and non-woven material.” DW ¶ 14. 3M Scotch-Brite Type A Very Fine is a manufactured non-woven material of 15 denier fibers. This is highly conventional. CIBO goes against this convention by using fibers that are typical of belt reinforced material that is not normally used to achieve abrasive action. DW ¶¶ 9, 10, 14, 20, 21,23, 24, 28 and 30. Therefore, one of ordinary skill in the pertinent art would not have found it obvious to make a fiber diameter of 0.75 mm to 0.85 mm.

[0015] Furthermore, Claim 12’s larger denier fibers which thus allows for much coarser grains than available in conventional non-reinforced non-wovens like Teetzel’s wheel. DW ¶ 31. The non-wovens in Teetzel’s wheel are Very Fine 280 grit. DW ¶¶ 14, 19, 27 and 30. Teetzel’s wheel compresses regardless of its non-woven grain specification; its non-woven are unlike CIBO’s since Teetzel does not teach abrasive action using the grains. DW ¶ 31. Therefore, Teetzel is not analogous and one of ordinary skill would not have found it obvious based on Teetzel’s teaching, which use the non-wovens for compressibility alone.

[0016] The present invention is “the only abrasive product ... that incorporates a non-woven scrim with coated abrasives.” DW ¶ 30, last sentence. Using 0.75 to 0.85 mm diameter fibers with a non-woven coated abrasive product is viewed by an industry expert [DW ¶¶ 2-8] as highly unconventional. DW ¶ 14 and 20.

[0017] Accordingly, claim 12 is nonobvious and allowable.

4. Graham Secondary Considerations

[0018] The following secondary factors under *Graham* and its progeny are also pertinent. Each factor is considered with respect to claim 12.

A. Commercial Success Is Attributable to Fiber Diameter of 0.75 mm to 0.85 mm.

[0019] The invention (RCD disc) is being sold throughout Europe and North America, including the U.S. and Canada. CIBO helps U.S. businesses in particular become more competitive, with

U.S.-based customers such as: **Rex Cut, Fall River, MA**. Commercial success of the RCD disc can be understood in terms of units sold, as shown in Table I, below:

Year	Units Sold (nearest hundred)
2009 (excluding December)	121,200
2008	122,900
2007	79,900
2006	63,900
2005	40,000
2004	9,900

Table I. Units Sold.

For the year 2009 it is important to take in consideration the economic crisis. Overall, CIBO sales dropped at the end of November 2009 with 17.75% compared to the sales of 2008. Since the RCD was almost equal in sales at that time, sales can be said to increase by approximately twenty percent (20%), since the figures of December have to be added. However, the overall trend of an increase in sales with correction for the economic crisis shows ongoing commercial success.

[0020] The commercial success of Applicant's invention is due in part to a difference in attrition rate resulting from claim 12's much larger diameter non-woven fibers. The larger fiber size, as claimed, which allows for more air to allow cooling that also facilitates lower sanding speeds and lower attrition rates which increases the overall life of the product. DW ¶ 29. Cf. DW ¶ 30 (noting higher attrition rate of thicker fibers of Teetzel's wheel: 3M ScotchBrite Very Fine Type A nonwoven).] Applicant's invention using thicker fibers contributes to lower attrition rate, and thus longer life which is attributable to its much larger fiber size. Thus, the *Graham* secondary factor of "commercial success" favors a finding of nonobviousness. MPEP 716.03.

B. Long-felt Need for Something to Solve the Problem Addressed By the Invention Exists in This Case.

[0021] For many years, multiple steps were needed to abrade a workpiece; removal and finishing were recognized as different steps. Specification ¶¶ 0003-0005 and 0033-0036; DW ¶¶ 6, 25 and 31. However, applicant's invention addressed this problem by providing a faster process that eliminated the need for a two-step sanding process. Material removal (step 1) and smoothing (step 2) with two separate abrasive discs can be achieved much more easily due to the longer life and faster

speed of the present invention [Specification ¶¶ 0033-0036]. Thus, the long-felt need to have an easier and faster abrasive process and longer-lasting abrasive capabilities was addressed by the overall configuration of the present invention, including the specific fiber diameter of 0.75 mm to 0.85 mm.

[0022] Alleviating heat while providing adequate surface area to adhere the grains is another long-felt need. DW ¶ 29. If the fibers were thicker, less heat would escape and the process would be very hot. If the fibers were thinner, less abrasive sanding grains would be stuck to the glue and fibers. DW ¶ 29, 31. The diameter strikes a balance between having enough sanding grains while allowing cooling during the sanding process, while maintaining durability for longer product life via the 0.75 to 0.85 mm fiber's greater tensile strength. DW ¶ 20.

[0023] Therefore, this factor, long-felt need, favors a finding of nonobviousness.

C. Failure of Others to Develop the Claimed Invention Exists and Thus Favors a Finding of Nonobviousness.

[0024] No other entity has developed the claimed invention. Expert witness David Wagner of Standard Abrasives, the only competitor to 3M with domestic manufacturing capability, also did not develop the claimed invention. DW ¶¶ 1-32. Wagner and his team of development engineers at Standard Abrasives regularly conducted R&D activities, including seeking out problematic abrasive applications which customers would like to see improved. DW ¶ 7. Those solutions did not materialize the present invention. DW ¶ 1-32. "The abrasive face of the non-woven scrim in CIBO's disc invention is unique in this respect. It is the only abrasive product to my knowledge that incorporates a non-woven scrim with coated abrasives." DW ¶ 30. Therefore, there was a failure of others to develop the claimed invention. This factor favors a finding of nonobviousness.

D. Unexpected Results Exist and Thus Favors a Finding of Nonobviousness

[0025] Unexpected results favors a finding of nonobviousness. "A greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness ... of the claims at issue." *In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985) (claimed combination showed an additive result when a diminished result was expected). MPEP 716.02. In this case, Applicant's claimed range of very large fibers of 0.75 to 0.85 mm is highly unconventional [DW ¶¶ 14 and 20] and would not have been expected to be incorporated as an abrasive product because of its high durability and because sanding grains would be worn away much faster [DW ¶ 30 (higher attrition rate of grains compared to nonwoven fibers)].

The scrim is a detriment to an abrasive wheel's performance. The scrim does not wear away and the abrasive grains adhered to the non-wovens would not perform any more work in a wheel configuration. The attrition of the grain needs to match the attrition of the non-woven material, to allow the entire structure (the wheel) to wear down uniformly. With a large fiber diameter, the grains would have a higher attrition rate than the fibers. Teetzel lacks the scrim, which follows the conventional approach of using unreinforced non-wovens in wheels. The ScotchBrite Very Fine Type A in Teetzel's wheel is an unreinforced material. The abrasive face of the non-woven scrim in CIBO's disc invention is unique in this respect. It is the only abrasive product to my knowledge that incorporates a non-woven scrim with coated abrasives.

DW ¶ 30. The result is a working product with coated abrasives and non-woven material which uses very large fibers (0.75 mm to 0.85 mm); that result is unexpected since it is unconventional. DW ¶ 14 and 20. Further, the specification provides:

[0033] According to the state of the art, after sanding with a conventional aggressive sanding instrument such as a fibre disc, a lamella sanding disc, a trimming disc, etc., such a weld 14 of a workpiece is smoothened by a means of what is called a conventional finishing disc, which mainly has a three-dimensional open fibre structure in which are provided sanding grains.

[0034] In some cases, it is possible to sand and finish the workpiece in a single step with one and the same finishing disc. In that case, the finishing disc will be entirely worn after smoothening the surface of five workpieces. When the same finishing process is carried out by means of the laminated disc 1 according to the invention, it is found that one and the same disc can treat sixteen of such workpieces before the disc has worn out.

[0035] Moreover, it was found that in order to smooth 25 welded joints by means of said conventional finishing disc, a processing time of 41 minutes and 36 seconds was required. When 25 identical welded joints are smoothened by means of the laminated disc according to the invention, only 23 minutes and 52 seconds are required.

Specification ¶¶ 0033-0035. A further unexpected result is the ability of the present invention to achieve the same amount of work in half the time, compared to a traditional disc; one can work twice as fast using the claimed invention. Specification ¶ 0036. In addition, the life of the laminated disc according to the invention is more than three times the life of a conventional finishing disc. *Id.* Thus, *Graham* factor of "unexpected results" favors a finding of nonobviousness.

E. Copying by Others Favors a Finding of Nonobviousness

[0026] The invention has been copied, including the claimed limitation. CIBO, the sole and exclusive assignee of USPA 10/578,256, is a practicing entity. Its RCD disc, the subject of this application, has been copied throughout the world, including the United States, Italy, Portugal, Slovenia, Israel, and Turkey. In the United States, Applicant submits that Lehigh Valley Abrasives (LVA) copied Applicant's invention (assigned to CIBO), and has even used CIBO copyrighted images in its

(LVA's) own marketing literature, taken directly from CIBO's website.⁶ Copying by LVA of CIBO marketing literature shows that CIBO is indeed the source. Therefore, the fourth factor, copying by others, strongly favors Applicant. Applicant submits that to allow this to continue would be a miscarriage of justice.

F. Expert Skepticism Concerning Use of Large Fibers Favors a Finding of Nonobviousness

[0027] "Expressions of disbelief by experts constitute strong evidence of nonobviousness." *Environmental Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 698, 218 USPQ 865, 869 (Fed. Cir. 1983) (citing *U.S. v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 483-484 (1966)). MPEP 716.05 ¶ 1. "The skepticism of an expert, expressed before these inventors proved him wrong, is entitled to fair evidentiary weight... as are the five to six years of research that preceded the claimed invention." *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988); *Burlington Industries Inc. v. Quigg*, 822 F.2d 1581, 3 USPQ2d 1436 (Fed. Cir. 1987) (testimony that the invention met with initial incredulity and skepticism of experts was sufficient to rebut the prima facie case of obviousness based on the prior art). MPEP § 716.05 ¶2.

[0028] Here, affiant David Wagner ("Wagner") possesses experience as Chief Engineer, Standard Abrasives (1981-1985), VP of R&D and Engineering at Standard Abrasives (1985-2000), and as Managing Director at Vector Five, LLC (2001-2003). Wagner's experience with non-woven abrasives spans over twenty three (23) years of experience with non-woven abrasives specifically [DW ¶ 3], including training engineers in abrasives. [*Id.*] Overall, Wagner possesses over thirty years of experience [DW ¶ 4]. Moreover, Wagner previously built a manufacturing facility to allow Standard Abrasives to vertically integrate in the non-woven abrasives market to compete with 3M, after 3M had acquired their key supplier [DW ¶ 3]; Standard Abrasives was later acquired by 3M [*Id.*] Furthermore, Wagner possesses no financial interest in the invention, or its assignee. DW ¶ 1.

[0029] Applicant's invention was considered unconventional due to its large fiber size. DW ¶ 11 ("diameter of 0.75 mm to 0.85 mm is considered enormous and highly unconventional..."). However, upon further consideration, Applicant's invention was praised in comparison to Teetzel. DW

⁶ See Cibo, RCD; Cf. LVA, 4-1/2" Interleaf Quick Combination Flap Disc. It is also notable that the creation date of LVA's website (2007) is later in time than Applicant's priority filing date (2004), international filing date (2005), and §371 date (2006). See Network Solutions, LLC, Registry Data: lehighvalleyabrasives.com. This further substantiates copying in support of nonobviousness.

¶¶ 15 (constant Surface Feet Per Minute of the disc over Teetzel's wheel), 16 and 20 (fiber size gives the present invention more tensile strength).

[0030] In contrast, Wagner's criticism of Teetzel's patent disclosure is expressed. *Infra* at III.4.G (Inoperability of Cited Reference). Skepticism of Teetzel and praise of Applicant's invention provides strong evidence of nonobviousness. Thus, a finding of nonobviousness is favored since the unconventional nature of Applicant's invention was met by initial skepticism of Applicant's own expert witness. Therefore, the "expert skepticism" factor under *Graham* favors a finding of nonobviousness.

G. Inoperability of Cited Reference Teetzel Is Due to Teetzel's Reliance on Very Fine Type A Nonwovens and Variable Speed Lathe-Based Data, Which Supports a Finding of Nonobviousness

[0031] Inoperability of references also warrants consideration. MPEP § 716.06. In the present case, Teetzel's data was obtained using a variable speed lathe. This is impractical since industrial abrasive applications rarely use lathes for surface finishing and deburring. DW ¶ 15. Teetzel also purports to cover a "huge range" with ratios of 15:1 to 1:5 sandpaper to nonwoven fibers. DW ¶ 17. Teetzel's configuration as a wheel is an important distinction because it In sum, Teetzel is inoperable as a reference. Therefore, Teetzel's inoperability as a reference favors a finding of nonobviousness.

[0032] Therefore, the *Graham* secondary factors, alone and in combination, favor a finding of nonobviousness. Thus, claim 12 is nonobvious and allowable.

5. Rebuttal of Prima Facie Case Concerning Overlap of Ranges

[0033] It is possible to construe the Examiner's obviousness rejection as allowing a wide range of fiber sizes to be "an obvious design choice based on machining parameters and desired finish of a workpiece," [OA at 3] which could be seen as including all possible fiber sizes. MPEP § 2144.05 provides:

"[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a prima facie case of obviousness." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). >See also *In re Harris*, 409 F.3d 1339, 74 USPQ2d 1951 (Fed. Cir. 2005)(claimed alloy held obvious over prior art alloy that taught ranges of weight percentages overlapping, and in most instances completely encompassing, claimed ranges; furthermore, narrower ranges taught by reference overlapped all but one range in claimed invention).< However, if the reference's disclosed range is so broad as to encompass a very large number of possible distinct compositions, this might present a situation analogous to the

obviousness of a species when the prior art broadly discloses a genus. *Id.* See also *In re Baird*, 16 F.3d 380, 29 USPQ2d 1550 (Fed. Cir. 1994); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); MPEP § 2144.08.

[...]

Applicants can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. “The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Id. In the present case, the claimed range of 0.75 to 0.85 mm fibers is a critical range because it is characterized by a fiber size consistent with that of scrim fiber sizes, which are not taught by Teetzel. [OA at 3.] It is common in the abrasives industry to make non-wovens with diameters of substantially 0.04 mm diameter, not the claimed range of 0.75 mm to 0.85 mm. DW ¶ 14. The claimed range of 0.75 mm to 0.85 mm is enormous in practice and highly unconventional. *Id.* Teetzel does not fairly suggest using this critical range. Therefore, the *prima facie* case of obviousness cannot be sustained.

[0034] Thus, claim 12 is nonobvious and allowable.

6. Conclusion RE: Obviousness Determination

[0035] In light of the foregoing, Teetzel does not fairly suggest to one of ordinary skill in the pertinent art to construct fibers of 0.75 mm to 0.85 mm as claimed. The *prima facie* case is rebutted by the specific range of 0.75 to 0.85 mm fiber diameter. The *Graham* factors as applied to this case support a finding of nonobviousness, as discussed *supra*. Therefore, claim 12 is nonobvious and allowable.